

# Appendix G

Rail System Capacity for Handling Solid Waste



## APPENDIX G

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#### Introduction-Definition of an Intermodal Facility

This appendix summarizes local rail system's existing handling capacity for solid waste, and describes concerns about the adequacy of this capacity given the region's future needs for waste export. This concern was a primary factor influencing the Division's business case.

An initial observation is that adequate rail (train track) capacity exists to export waste between the region and a future disposal site—but there is a potential problem with capacity for **intermodal handling**. Truck-to-train intermodal handling capability is a key component of a waste export system—in simplest terms, an intermodal facility is the place where containerized waste is loaded from trucks to trains for long haul and disposal. By the time Cedar Hills reaches capacity, King County will have the need for an intermodal site suitable for handling a sizable waste stream (greater than 1 million tons per year). The table below presents projected solid waste tonnage and train capacity needed for King County's regional waste stream when Cedar Hills is anticipated to reach capacity, and currently projected in 2030.

**Table 1. Solid Waste Tonnage and Train Capacity**

	<b>2012</b>	<b>2030</b>
Estimated Annual Solid Waste Tonnage <sup>a</sup>	1,098,500	1,250,000
Average Daily Tonnage	3,500	4,000
Projected Number of Waste Containers per Train <sup>b</sup>	112	130
Number of Rail Cars <sup>c</sup>	56	65
Average Tons of Solid Waste per Train	5,450	6,200

<sup>a</sup> Based on the Division's tonnage projections, June 2002.

<sup>b</sup> Estimated at an average number of 31 tons of waste per container (HDR Engineering Inc.; **Appendix J**).

<sup>c</sup> Industry standard is 2 containers per rail car (HDR Engineering Inc.; **Appendix J**).

<sup>d</sup> Trains would depart 6 days per week (HDR Engineering Inc.; **Appendix J**).

It is critically important to note that a truck-to-train intermodal facility is much more than just a transfer site along a stretch of rail track. It is a large, complex facility with unique requirements and constraints.. It carries with it, the following minimum requirements for the export of solid waste:

- **Size of the Site** – 10 acres or more
- **Site Configuration** – Able to support the facilities and space needed for intra-site truck and train traffic
- **Land Use Zoning** – Industrial
- **Proximity to Residential Areas** – Prefer sites that are not near, or do not impact residential areas
- **Proximity to Railroads** – Within 200 feet of an existing railroad controlled track

An intermodal facility also has the following specific area requirements:

***Train Processing Area:*** Solid waste trains run as “unit-trains,” meaning the railcars and containers are dedicated to hauling solid waste only. A train with containers full of solid waste runs from the intermodal facility to the landfill, and a train with empty containers returns to the intermodal facility. The containers are not suited for other types of cargo, so “back-hauling,” or returning with other types of cargo, is not feasible.

The train cycle time is the time necessary for a train to be loaded with waste containers, leave the intermodal yard and travel to a landfill, be unloaded and reloaded with empty containers, and then return to the intermodal yard. This cycle significantly affects both the cost of transporting waste and the ability of the region to dispose of waste in a timely manner. To maximize equipment use and efficiency, intermodal railcars must be unloaded and loaded as quickly as possible. This means that intermodal facilities must have dedicated loading and unloading tracks that do not interfere with other rail traffic in the area. These loading/unloading tracks must have the capability of handling trains that are between 4,200 and 4,800 feet in length.

***Container Storage Area:*** Intermodal facilities must have a large parking lot where both full and empty containers can be parked or stacked. Space for container storage is necessary to ensure there are containers available to be sent to transfer stations for filling, and there is space to store loaded containers until a train is available for shipping waste to the landfill. The container storage area to support the projected solid waste volumes in the region, days of operation, and train cycle times is equivalent to as much as two trainloads, or between 224 and 260 containers.

***Railcar Storage Area:*** Ideally, an intermodal facility has space for an adjacent railyard to hold surplus railcars. Surplus railcars would be generated as a result of peaks on certain days of the week, or occasions when train processing is disrupted by unforeseen events such as rail mainline derailments, slides, etc. The railyard space would also provide staging tracks for loaded outbound trains. The railcar storage requirements to support the projected volume of solid waste, days of operation, and train cycle times is equivalent to as much as one train between 4,200 and 4,800 feet.

## **Current Intermodal & Spot Capacity for Solid Waste**

For purposes of this discussion “intermodal facilities” are yards capable of arriving and departing whole trains, loading and unloading cargo from trains, and storing full and empty cargo containers. “Spot facilities” are areas where groups of rail cars can be set or “spotted” for loading and unloading by switch engines. Spot facilities do not have the rail space to arrive and depart whole trains and are dependent upon other rail yards for this function.

There are only three existing truck-to-train intermodal sites in the region that handle commercial cargo, and only one of these facilities, the Argo Yard, handles solid waste. The existing intermodal sites were developed and are owned by the two railroads that serve the western United States: the Union Pacific Railroad (UP) and the Burlington Northern/Santa Fe Railroad (BNSF). UP’s intermodal facility is at the Argo Yard in South Seattle. BNSF’s intermodal facilities are at its Seattle International Gateway in Seattle’s SODO District and South Seattle Domestic Intermodal HUB near Tukwila.

There are two spot facilities that handle solid waste. They are located on tracks adjacent to Allied Waste Industries’ Third and Lander transfer station, also in Seattle’s SODO District, and on tracks adjacent to Allied’s Black River Quarry CDL Handling Facility. Both sites are accessible only by BNSF tracks and both are dependent upon BNSF’s Interbay Rail Yard near the Magnolia neighborhood in Seattle, for arriving and departing whole trains.

The capacity of each of these existing facilities to handle solid waste is discussed below, followed by an assessment of the adequacy of this existing capacity given the region’s need for intermodal transfer and disposal in 2012.

### **Intermodal Facilities:**

***Argo Yard (owned by Union Pacific Railroad):*** Argo Yard was developed to load/unload international cargo from the Port of Seattle and domestic cargo for the greater Seattle area (Deborah Uehl – UPRR). However, through a contract with Waste Management, it also handles the City of Seattle’s municipal solid waste, which is exported to Waste Management’s Columbia Ridge Landfill in eastern Oregon, along with some construction and demolition debris from the region.

The Argo Yard contains eight double-ended yard tracks and two load/unload tracks for handling solid waste. One solid waste-dedicated train per day departs from Argo Yard Monday through Saturday for the Columbia Ridge Landfill. The average train length is 60 railcars, totaling approximately 4,200 feet. The maximum train length allowed on the UP railroad between Seattle and eastern Oregon is 8,000 feet. Switching railcars between the load/unload storage and storage tracks can be done without occupying the main rail line. There is no dedicated storage for solid waste railcars on the site, and all 220 railcars in Seattle’s waste export system must be available on Mondays to begin hauling Seattle’s waste out of the region. As a result, railcars are stored on unoccupied yard tracks, or on

sidings as far south as Tacoma due to space limitations at the site (HDR Engineering Inc.).

The current rail capacity of Argo Yard for solid waste handling, assuming one shift, six days per week, is 1.2 million tons per year. The rail capacity could be increased to 1.7 million tons per year by adding one shift. However, any increase in solid waste handling activity would require added solid waste-related operations to compete with cargo operations for already limited tracks for railcar storage, tracks to move railcars between the loading/unloading and storage tracks, and switch engines (UPRR). This increased demand on tracks and equipment for handling solid waste would directly impact the movement of international and domestic cargo through the Argo Yard. The increase in train switching activities would also impact the Port of Seattle's Terminal 5 operations, where international commercial cargo is also loaded between ships and trains of 8,000 feet in length on average. When these trains move between Terminal 5 and the UPRR main line, switching operations inside the Argo Yard are effectively halted (HDR Engineering Inc.).

***Seattle International Gateway (BNSF):*** The Seattle International Gateway is a near-dock Intermodal facility which loads/unloads international cargo from the Port of Seattle only. It serves no domestic intermodal customers (Kimberly Kessel – BNSF). The facility is located in Seattle's SODO District, which is transitioning from an industrial area to a mixed-use area that increasingly includes business, retail, and entertainment uses. Due to this evolving land use pattern, it is not feasible to expect the Seattle International Gateway to physically expand to provide intermodal capacity for solid waste handling.

***South Seattle Domestic Intermodal HUB (BNSF):*** The South Seattle Domestic Cargo Yard is a small intermodal yard dedicated to handling incoming and outgoing domestic cargo. It serves those cargo customers who do not ship or receive cargo through the Port of Seattle. The South Seattle HUB is fully developed and utilized for domestic cargo. The volume of domestic traffic has this facility operating at or near capacity. Nearby solid waste functions at the Black River Quarry site (discussed below) are required to bypass this facility and utilize the Interbay Yard near Magnolia (HDR Engineering, Inc.).

#### **Spot Facilities:**

***Allied's Third & Lander Transfer Station (served by BNSF Railroad):*** Allied's Third & Lander transfer station is adjacent to eight tracks leased from the BNSF. Allied uses these tracks to export about 75,000 tons of the region's CDL annually to its Roosevelt Landfill, in Klickitat County, Washington. These tracks are capable of spotting up to 51 rail cars for loading/unloading solid waste containers. The tracks are not long enough to arrive or depart whole trains. Rail cars must be moved between the Third & Lander tracks and BNSF's Interbay Switch Yard near Magnolia

The capacity of handling solid waste at the Third & Lander facility, assuming one shift, six days per week, is approximately 1.1 million tons per year. Capacity could be increased by adding one shift per year, to approximately 1.6 million tons per year.

However, any increase in volume would need to arrive and depart from the Interbay Rail Yard. An increase in shuttling rail cars between Interbay and Third & Lander would conflict with the mainline rail functions at Interbay as well as activities cargo switching activities within the Interbay Yard. Mainline rail functions include international intermodal shipments to and from the Ports of Seattle and Tacoma and Sound Transit Commuter Operations. Switching operations include building cargo trains for shipping goods to Chicago and other rail hubs.

It should also be noted that Interbay is fully developed as a switching yard. It has no truck-to-train intermodal capacity and does not have room to expand or provide it. Additionally, the Interbay Rail Yard is located at the base of the Magnolia neighborhood. Continued operation of the yard is not certain due to ongoing concerns from the neighborhood about noise, light, and glare (HDR Engineering Inc.).

***Black River Quarry (served by BNSF Railroad):*** Allied's Black River Quarry CDL Handling Facility is adjacent to a single track and is used to export approximately 75,000 tons of the region's CDL to the Roosevelt Landfill. The track is capable of spotting up to 16 cars for loading/unloading waste containers. As is the case for the Third & Lander spot facility, all trains using the Black River Quarry must arrive and depart from Interbay. Given the increased distance between Black River and Interbay, impacts to BNSF's mainline functions would likely be greater than those caused by increased solid waste activities at Third & Lander (HDR Engineering Inc.).

### **Feasibility of Expanding Intermodal Capacity for Solid Waste Handling**

The region currently exports approximately 850,000 tons of waste annually consisting of the City of Seattle's waste stream and CDL. By 2012, when King County is projected to begin exporting its waste, approximately 2.3 millions tons of waste have to be exported from the region, an increase of 170% from current levels. As discussed above, the Argo Yard and existing spot facilities could conceivably expand their solid waste handling operations to provide intermodal services for additional waste streams. However, this would be difficult to accomplish and would significantly impact cargo handling at the existing railyards.

The region's existing intermodal yards are built-out with no space to physically expand. Expansion of intermodal capacity can only be achieved through additional work shifts and tighter rail schedules. Any expansion of intermodal capacity for *solid waste* handling at these facilities, however, would be problematic, because it would significantly impact rail and Port of Seattle capacity for commercial cargo handling. Argo Yard and Seattle International Gateway primarily provide services to national and international shippers using Port of Seattle facilities. These facilities were built to provide service to businesses that ship large volumes of commercial cargo through West Coast ports to the Midwest and East Coast. International intermodal traffic is also projected to grow at a rate of between 3.4% and 4.4% compounded annually over the next 20 years for Pacific Northwest Ports (Marine Commerce Forecast prepared for the Washington State Public

Port Association and Washington State Department of Transportation in 1999), so increases in capacity for handling cargo will likely make it even more difficult to adjust shifts to add capacity to handle solid waste at these facilities.

As capacity at these existing facilities becomes more constrained over time, the UP and BNSF railroads are likely to give priority to their larger national and international commercial cargo customers. This is because long-distance cargo trains (with multiple destinations for the cargo they carry) generate more revenue on a per train basis than what a solid waste-dedicated train will generate since solid waste trains are comparatively lighter and travel shorter distances. Long distance intermodal cargo handling is also the railroads' primary business, as evidenced by fact the movement of cargo accounted for 38% of the railroad revenues compared to 8% accounted for primary forest product commodities, government, machinery and **waste** traffic combined (2002 BNSF Annual Report). This fact combined with the forecasted growth in intermodal cargo handling makes it very clear that the railroads will place a higher priority on meeting the growing needs of their regular cargo customers than meeting the needs of their solid waste customers.

There is also limited opportunity to create new intermodal yards that will be made available to solid waste. There are a large up-front capital costs associated with such facilities, and it is not likely that waste disposal companies will make such investments without some guarantee that they will be fully utilized. Moreover, the large size and unique locational requirements of intermodal facilities suggest that it will be very difficult to site and build new ones. Difficulties in locating suitable sites will only grow in the future, as industrial land becomes more scarce.

### **Risks Associated with Relying on Existing Intermodal Sites**

As discussed above, there is the clear risk of relying on existing intermodal capacity to meet the region's needs for exporting of solid waste in the future. Regional needs for waste export will increase dramatically after Cedar Hills closes, approaching the limit on currently available capacity. And there will be increasing pressures on existing capacity given demands for cargo transport as the economy of the region grows – intermodal capacity for handling solid waste at existing sites could foreseeably decrease in the future.

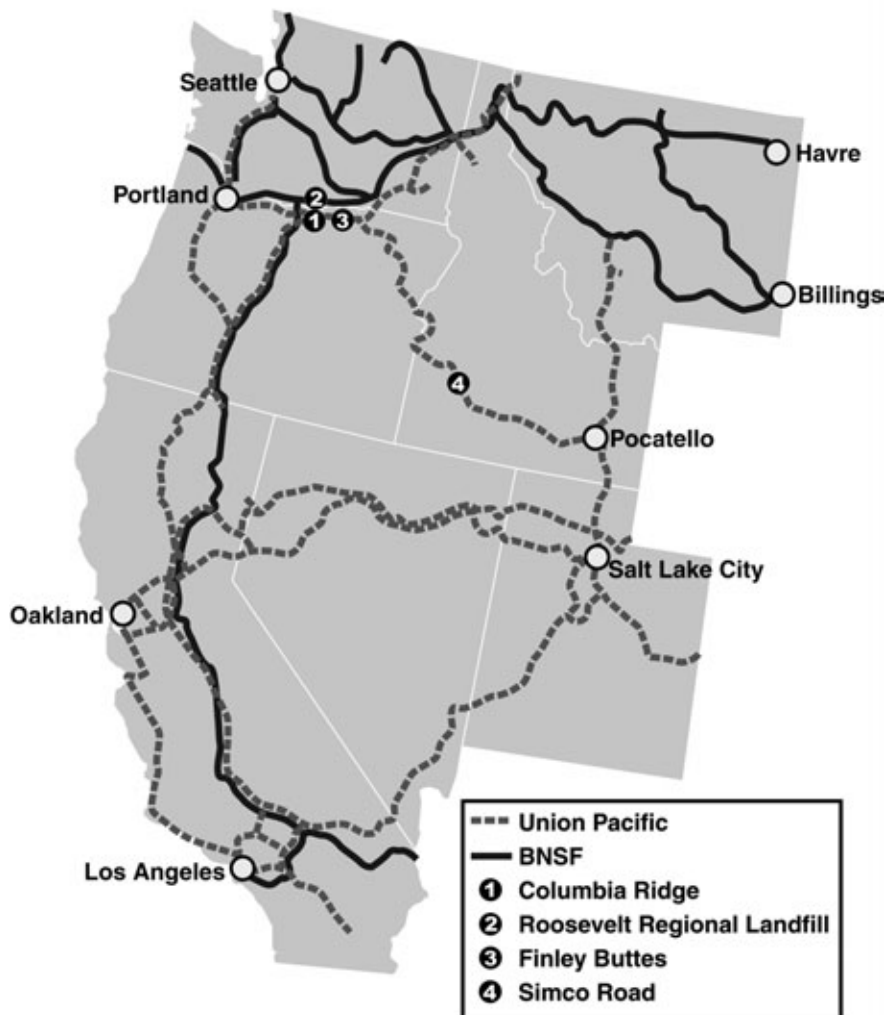
There is also a clear risk in relying on the existing facilities, because they are privately owned and operated, subject to business decisions of waste management companies and the railroads. At some point in the future, the UP may decide not to lease rail yard capacity to Waste Management, given increasing pressures on cargo transport. BNSF, for various business reasons, may at some point in the future wish to cease leasing tracks to the Third & Lander Transfer Station and Black River Quarry CDL Handling Facility. And since Allied owns the adjacent Third & Lander and Black River Quarry facilities, they could potentially make a business decision to do something else with that property.



Access to consistent and adequate intermodal capacity for solid waste trains is a necessity for a waste export system to work. Solid waste trains must arrive and depart daily to handle the constant flow of solid waste to be disposed. The trains require a dedicated amount of loading/unloading track space, and sufficient railcar storage. Garbage backups caused by delays of service can impose significant costs, as well as potential health and environmental threats. Having reliable intermodal capacity is fundamental to waste export to be a viable means of disposing waste in a reliable, efficient, and environmentally protective manner

In addition, relying on existing sites for intermodal capacity would constrain private-sector competition for the County's waste stream. Since waste export began in the region in 1991, there have been at least two additional export-compatible landfills that have opened: the Finley Buttes Landfill (owned by Waste Connections) and the Simco Road Regional Landfill (owned by Idaho Waste Systems).

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Both of these landfills are owned and operated by competing waste management companies, currently without a major presence in this area. These companies have indicated an interest in competing for King County's solid waste and are served by the rail system. However, the two intermodal yards with some capacity to provide intermodal service for solid waste trains are currently under contract with Waste Management or Allied, who use them to transport wastes to the landfills they operate. As a result, it will be extremely difficult for the other landfill owners/operators to provide waste export services. Without access to an intermodal facility, they cannot access the waste stream. This may in turn prevent the County from receiving the lowest cost bid.

Moreover, existing capacity is owned by the railroad companies (BNSF or UP), and would serve only landfills located on their respective rail line (BNSF or UP). UP's Argo Yard, for example, is used to ship waste to Waste Management's Columbia Ridge Landfill, on a UP rail line. Tracks leased from BNSF by Allied are used to ship waste to Allied's Roosevelt landfill, located on BNSF rail line. Relying on an existing intermodal site would thus constrain the decision about which landfills could receive the County's waste stream. To maximize competitive choices, it would be ideal to have an "independent" intermodal site that could easily access landfills served by either UP or BNSF.